Press Release

National Weather Service
5027 Miller Trunk Highway
Duluth, MN 55811

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Contacts: Carol Christenson
(218) 729-0651 x 726
Mike Stewart
(218) 729-0651 x 642

Anyone who has experienced the biting cold wind on uncovered cheeks and noses can attest to the fact that the wind does have a cooling effect on the human skin.

Starting with this winter season, the National Weather Service will use a new Wind Chill Temperature Index, designed to calculate a more accurate reading of how the cold air feels on skin. Since 1945, the United States has used an index which relied on observed winds 33 feet above the ground, and focused on how fast the cold temperatures- combined with winds- made water freeze. The new index accounts for the wind effects at face level, and a better calculation for body heat loss. For example, under the old index system, an air temperature of 20 degrees, with a 15 mph wind, translated into a reading of five degrees below zero. The new index calculation would translate the same conditions to six degrees above zero.

The new index will be based on:

- Wind speed calculated at the average height of the human face, about five feet (the face is most often exposed to the cold).
- An updated heat transfer theory, which factors in heat loss from the body to its surroundings during cold, windy days.
- A consistent standard for skin tissue resistence.
- Clear night sky conditions.
- A lowered calm wind threshold from 4 mph to 3 mph.

For the past year, the National Weather Service has led a team of international scientists with the goal of creating an international standard wind chill index among the meteorological community.
Last spring, the scientists conducted clinical trials and the results helped to verify and improve the accuracy of the new formula. It was found that at a wind chill of -18, frostbite occurs on exposed skin in 15 minutes, at a wind chill of -31, frostbite occurs in 10 minutes, and at a wind chill of -72, frostbite occurs in 2 minutes.

Wind Chill Chart

Temperature (°F)

Wind (mph)	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times

- 30 minutes
- 10 minutes
- 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T = Air Temperature (°F)
V = Wind Speed (mph)

Effective November 2001

Wind Chill Index, Old vs. New

Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New	Old	New
11	7	6	1	0	-5	-5	-11	-10	-16	-15	-22	-21	-28	-26	-34	-31	-40	-36	-46	-42	-52
-3	3	-9	-4	-15	-10	-22	-16	-27	-22	-34	-28	-40	-35	-46	-41	-52	-47	-58	-53	-64	-59
-11	0	-18	-7	-25	-13	-31	-19	-38	-26	-45	-32	-51	-39	-58	-45	-65	-51	-72	-58	-78	-64
-17	-2	-24	-9	-31	-15	-39	-22	-46	-29	-53	-35	-60	-42	-67	-48	-74	-55	-81	-61	-88	-68
-22	-4	-29	-11	-36	-17	-44	-24	-51	-31	-59	-37	-66	-44	-74	-51	-81	-58	-88	-64	-96	-71
-25	-5	-33	-12	-41	-19	-49	-26	-56	-33	-64	-39	-71	-46	-79	-53	-86	-60	-93	-67	-101	-73
-27	-7	-35	-14	-43	-21	-52	-27	-58	-34	-67	-41	-74	-48	-82	-55	-89	-62	-97	-69	-105	-76
-29	-8	-37	-15	-45	-22	-53	-29	-60	-36	-69	-43	-76	-50	-84	-57	-92	-64	-100	-71	-107	-78